

A New Diagnostic Sign in Neck Injuries

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IN 1928, PRESENTING a report on eight cases of neck injuries resulting from traffic accidents before the Western Orthopedic Association in San Francisco, I used the unfortunate term *whiplash*. This expression was intended to be a description of motion, but it has been accepted by physicians, patients and attorneys as the name of a disease; and the misunderstanding has led to its misapplication by many physicians and others over the years. This discussion is a reconsideration of the epithet after 34 years, and it results from the study of more than three hundred cases of injury to the neck in a recent three-year period. The patients had been referred for evaluation of the result of neck injuries received in traffic accidents. Each was given more than an hour to permit careful listening to a description of all his injuries, his treatment, his reaction to treatment and his final result.

Out of this three-year study there appeared what seems to be a new diagnostic sign with regard to the severity of the neck injuries resulting from traffic accidents. The sign is the aggravation of the neck pain or headache by the use of diathermy, heat, ultrasonic therapy, microthermy and, in some cases, by the use of traction while treatment is being administered. With progression of the study it became apparent that this sign was present in a small proportion of cases but still might be of some value, since all physicians faced with neck sprains resulting from traffic accidents find themselves at a loss originally to identify those cases in which severe injuries have been suffered. More valuable than the sign may be two corollaries which arose from this study. They make it possible to distinguish clearly between the patient with a severe injury whose pain is aggravated by the local application of heat, and the patient with a minor sprain to whom the heat is comforting and relaxing. First it became apparent that in cases of minor neck sprain the use of some form of local heat might cause symptoms to continue more or less indefinitely — frequently until the time the patient came to a court hearing with regard to his injury. The sometimes sudden recovery of these patients following the settlement of litigation has been attrib-

- The aggravation of neck pain and headache as a result of the use of diathermy or other forms of energy in the treatment of neck sprain may represent a diagnostic sign by which to distinguish severe injury of the neck from simple sprain.

In the case of simple neck sprain, the patient's complaints may be inadvertently continued more or less indefinitely by the use of high frequency energy or even locally applied heat. That recovery sometimes follows settlement of litigation in such cases may be due not to the award of money but to discontinuance of an aggravating medical treatment.

uted in some quarters to relief afforded by financial settlement. I do not consider this a true evaluation. I believe that the relief often may be due to discontinuance of medical treatment after a settlement is reached.

The second corollary is the observation that even in the absence of neck injury, many persons in their middle years in whom the common degeneration of the middle cervical spaces is present can be rendered symptomatic by the use of some form of high frequency treatment such as diathermy, microthermy or ultrasound.

In addition to these two corollaries, there is a further observation which is of interest because of the fact that it has been recognized by claims adjusters for a number of years and has apparently been entirely overlooked by physicians. This is the fact that in unusually violent automobile accidents in which major injuries are suffered, such as pelvic fractures, hip dislocation and the like, the patients never complain of neck injury. Even when specifically questioned on the point, these patients unhesitatingly reply they had no neck injury. I have insistently questioned such persons, despite their first quick denial, and have noted that almost invariably they at last recollect that for a time after they were out of the hospital but still going to a physician for treatment, they did have some difficulty in turning the head to back a car. Invariably they remarked that they had completely forgotten about this problem.

This observation leads to the obvious conclusion that on the occasion of the original injury the attention of physician, patient and nurses was focused on the major injury to the exclusion of the possibility of neck injury. It may be conjectured that

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consequently the neck, which had no treatment except for rest, recovered because of the absence of treatment — this being so little noticed that the patient himself in time had no spontaneous recollection of stiffness or discomfort in the neck. This lack of recall of this kind of discomfort has been observed even in persons in a position of claimant in actions at law.

In searching for an explanation of the diagnostic sign described herein, I conjectured that pain at the site of sprain was brought about by edema. In pursuing this thought, I reviewed numerous papers on the effect of the local application of heat, including one by Green and Gucker.⁴ This review brought me to the impression, which is now well established, that any form of heat applied locally for a half hour would produce some degree of edema at the site. Hence possibly the aggravation of pain by the application of local heat was due to the production of edema in the sprained area. The aggravation of pain by the application of repeated trauma through motorized traction might also be owing to the production of local edema.

That pain produced by ultrasonic therapy may aggravate the effect of neck sprains is easily believ-

able to one who listens carefully to the histories of patients. The use of pain thus produced experimentally in the study of analgesic drugs is well known since the report of Holliday and Dille in 1960.⁵ Ultrasonic therapy may also be found intolerable by patients with severe neck injuries.

Conclusion: The aggravation of pain with the use of diathermy, ultrasound or other local application of energy may be considered a diagnostic sign in the early recognition of severe neck sprains.

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